

Giraud Tool Company, Inc.

I. Instructions to convert an existing GTC Annealer to Induction Power

These instructions are for use converting existing propane or MAPP gas powered annealing machines to use the Fluxeon Annie induction power supply and core assembly. It involves using basic hand tools and a powered drill to add one hole to the existing machine. All conversion parts can be removed and replaced with the original ones if the user decides to go back to the original configuration. The only part not reversible is the addition of one small hole near the speed control and ON/OFF switch, but a small hole plug can fill the hole, if needed.

If you are purchasing a complete annealing machine from Giraud Tool, set up for induction, and are installing the Annie induction power supply, you can skip ahead in these directions to the section marked, "II. Now to Connect the Induction Power Supply" on page 5.

First off, we need to list the tools needed for this conversion so you can make sure you have everything you need on hand before you start. This conversion should not take more than 30 minutes for a person of average mechanical aptitude.

You will need the following tools:

- 3/32" hex allen wrench or T- handle driver
- 9/64" hex allen wrench or T- handle driver
- 7/16" hex wrench or socket and ratchet
- 9/32" drill bit suitable for use in light sheet metal
- Cordless or corded power drill to make single hole in light sheet metal
- Small file or deburring tool to remove burrs around drilled hole
- Medium size slip joint pliers to tighten retaining nut on 1/8" phono jack

To start the process, the original parts furnished that are going to be replaced need to be removed.

1. Unplug the power cord from any power source
2. Disconnect and remove the propane tank from the machine, if present
3. Remove the propane hose and torch assembly from the front of the machine
4. Remove the flat trolley plate from the C shaped riser on the front of the machine
5. Remove the C shaped riser from the trolley tab on the front of the machine
6. Remove the left and right lower guides from the front of the machine
7. Remove the entire trolley assembly from the rear of the machine
8. Remove the protective cover over the power switch and speed control rheostat
9. Remove the lower two screws holding the right hand side plate to the front face plate of the machine.

Keep all hardware for later reuse installing the new parts.

To begin installing the new induction system parts, lets get the hard part out of the way first.

1. Drill one 9/32" diameter hole in the right hand end plate near the power switch and speed control knob. The exact location is not critical, see the Figure 1 for suggested location. (New machines shipped after August 2015 have this hole already included and filled with a plastic hole plug. To use the hole in new machines, just remove the plastic hole plug.)

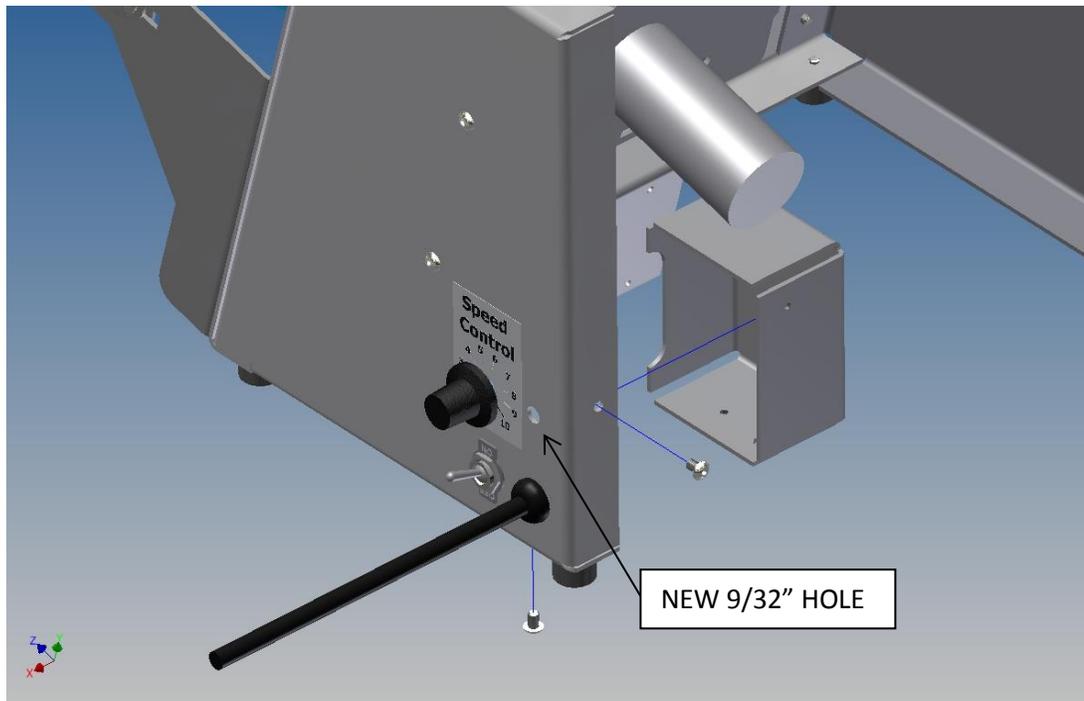


Figure 1 - New 9/32" hole for 1/8" phono receptacle.

- Once the new hole is drilled, carefully deburr the hole and make sure the inside surface right hand end panel is clean and all metal shavings have been removed.
2. Next, install the two lower guides that will catch the cartridge case as it falls out of the rotating feed wheel. Use the same hardware and mount in exactly the same place. Remember to leave the appropriate gap between the right and left sides to accommodate the size cartridge case you plan on processing.
 3. After the lower guides are installed, the bracket to hold the new ferrite core can be installed on the face of the machine. Use the new 8-32 socket head screws and fender washers provided with the kit to secure the bracket to the face of the machine in the two lower right hand scw positions where the face plate is joined to the right hand end plate. You will notice these holes are slotted vertically. This is so that you can adjust the height of the ferrite core relative to the cartridge case being processed. The core should always be positioned so the case is in the middle of the

opening in the C-shaped ferrite core, both vertically and horizontally. This is where the induction power is the strongest. See the following Figure 2 for a more detailed look how the parts fit together.

The new ferrite core from Fluxeon should be a round iron shape approximately 2-1/2" in diameter and 1" tall with a slot cut out of the circular shape approximately 5/8" to 3/4" wide. The core should be wrapped with a special multi-strand wire encased in a white protective sleeve around the ends of the core near where the slot was cut from the circular shape, and secured in place with heat shrink tubing. The white delrin plastic block should have a slot in it where the core will fit. Remove the two 1/4" nylon bolts from their threaded holes and place the core in the slot and replace the cover with the nylon bolts. Tighten with a small wrench or ratchet, but only until they are snug, do not over tighten or the nylon threads will strip.

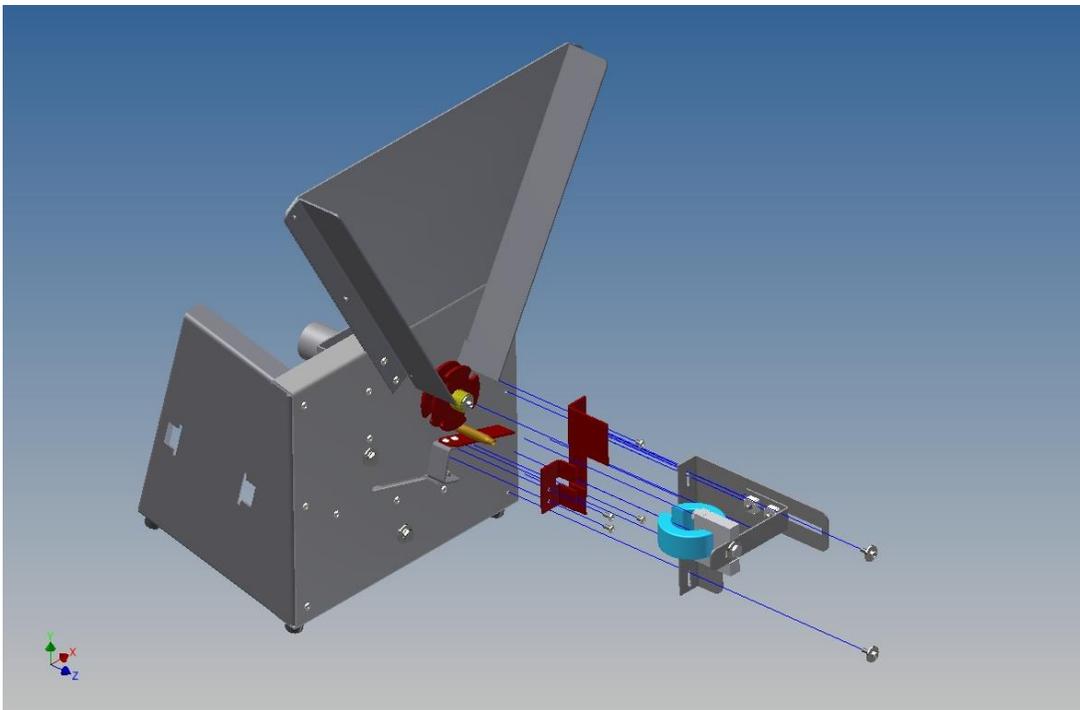


Figure 2 - Front view showing the lower guide pieces and bracket assembly to mount the ferrite core.

4. After these front panel parts are installed, next insert the new trolley assembly from the rear of the machine, with the tab of the moving portion projecting through the slot in the face of the machine. Use the same hardware and mount in the same holes as the original trolley assembly. Once installed, check for proper operation, making sure the trolley is not binding on any portion of the slot or other interference. It should easily retract to the far left position and fall freely down to the right when gently released.

5. Replace the C shaped riser on the trolley tab projecting through the face plate of the machine and add the new red fiberglass sheet trolley plate. Check operation for touching or scraping of the trolley plate as it is moving through the slots in the guide chute parts. If it is touching, retract the trolley to the far left end and gently bend the C shape and trolley plate up or down to remove the interference and check again, repeating as necessary. See figure 3 below.

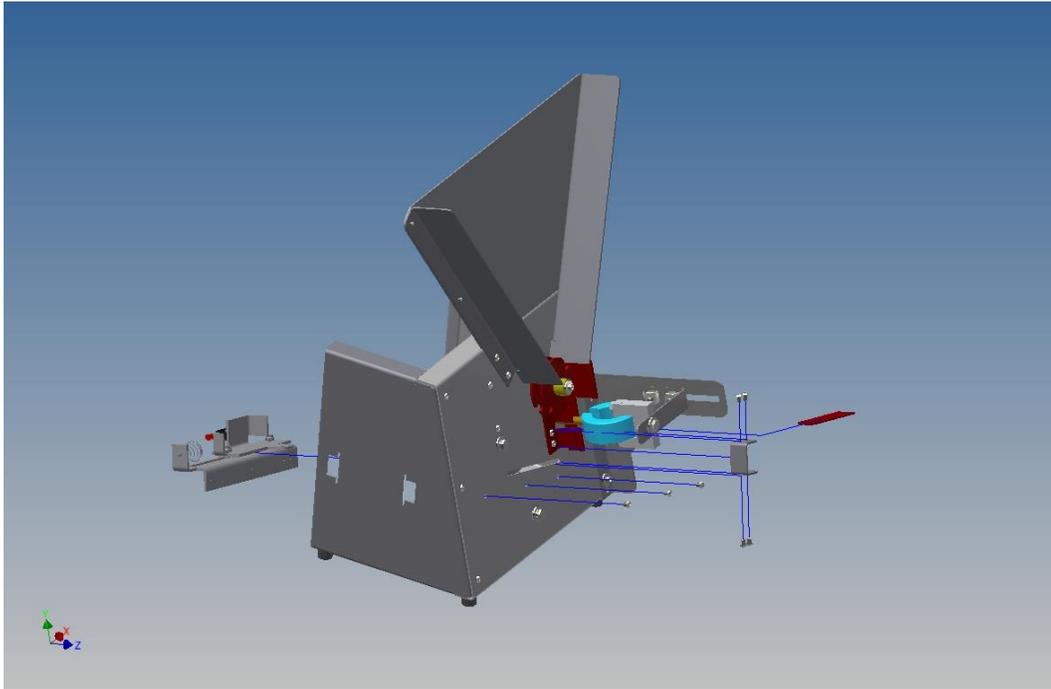


Figure 3 - Front view showing rear mounting of new trolley and front mounting of new C shaped riser and trolley plate.

6. Once the new trolley assembly is installed, the wires from the microswitch need to be routed under the trolley and behind the middle bracket where the motor and speed controller are located. The easiest way is to follow the three wires from the power outlet by securing the new wires to the existing black, white and green wires with a couple of small ty-wraps. Make sure the wires nearest the microswitch are not stretched or pulled too tightly, a small gentle flowing loop is preferred, positioned out of the way from any moving parts.
7. The other end of the wires from the micro switch are soldered to a receptacle for a 1/8" stereo phono jack, similar to the standard small headphone jack on most audio appliances and mobile telephones. Unscrew the retaining nut from the front end of the phono jack and place it through the newly drilled hole from step 1. Install the retaining nut on the threaded end of the phono jack projecting through and secure with small pliers as necessary. Take care not to scratch the metal on either the jack or the end panel, the nut does not have to be super tight, just snug.

8. After the phono plug has been installed, the protective cover can be reinstalled with the two original screws holding it in place. The unit can be plugged back into a wall outlet power receptacle and turned on to check operation. Everything should function as before, the speed control knob should adjust the trolley speed and the trolley should move and return as before.

II. Now to Connect the Induction Power Supply

The Fluxeon Annie is a small induction power supply that has a output wattage of approximately 1000W. It has its own power supply cord that needs to be connected to 120VAC, a typical wall outlet in your home or shop. **DO NOT ATTEMPT TO PLUG THE ANNIE POWER CORD INTO THE POWER OUTLET MOUNTED INSIDE THE ANNEALER**, it is not rated for the current draw the Annie will need.

1. First you will need to test the Annie to make sure it powers up and the timer is functioning properly. Plug the Annie power supply cord into a 120VAC wall outlet, making sure the power switch on the face of the Annie is off. When you turn the Annie on, the red, yellow, and green LEDs will immediately illuminate and the yellow and red will extinguish after a few seconds. The large red LCD display for the timer duration will illuminate and remain on, displaying the last time duration the unit was set to use.
2. To test the timer duration, push the large black knob until it clicks once, the yellow "set" LED under the display should illuminate, and you can then twist the knob to change the value on the display. It should be adjustable from 0.1 to 20.0 seconds by twisting the large black knob. When you have set the duration you desire, press the black knob a second time to lock in the timer setting you want, and the yellow "set" LED should extinguish. If you press the red "start" button, the red "heat" LED should illuminate and the timer display should begin counting down from its set point to 0.0s. When the timer reaches 0.0 seconds, the timer display should return to the previous duration and the red "heat" LED should extinguish. This should repeat if you press the red "start" button again.
3. You should now be able to turn the Annie power off and connect the wire leads from the iron ferrite core to the two large terminals on the face of the Annie. Using a small screwdriver, loosen and unscrew the clamp screws from the bottom of the terminal block and insert the soldered ends of the wire leads. Tighten the clamp screws to make sure the soldered end of the wire leads are fully in contact with the metal socket in the terminal block. Failure to do so may cause overheating and or misoperation of the device. See Figure 4.
4. Connect one end of the 1/8" phono jack patch cord into the newly installed receptacle on the side of the annealer and the other end to the small receptacle in

the face of the Annie, just under the DB-9 diagnostic plug. Make sure the patch cord ends are firmly installed and making contact as intended. Turn the Annie power supply on and wait for the LEDs to turn on and off as they signify the initial start sequence has ended. If the plug is not properly installed in the Annie receptacle, it will cause the Annie to begin the induction process immediately upon turning the power switch on. See Figure 4.



Figure 4 - Annie Induction power supply connected to the annealer showing the display, phono cord, and ferrite core connections.

5. Now, as you turn on the annealer and the feed wheels begin to rotate, you should hear the small microswitch attached to the trolley click after the trolley moves approximately 3/8" from the far right hand resting position. When the microswitch clicks, the Annie should immediately trigger and begin counting down the timer duration set and then reset. After the trolley has reached full leftward travel and released back to the right, this sequence should repeat automatically as long as the machine and power supply are left on.
6. You can now place a single cartridge case, with Tempilaq paint applied, into the hopper of the annealer and verify the timer setting you chose is heating the case to the desired temperature to anneal. You can also make changes to the position of

- the ferrite core to position the heat affected zone on the cartridge case as desired by loosening the hardware and sliding the pieces into new positions. Take care not to .
7. Position the ferrite core slot too near to the tip of the case, as it will most likely ca.0
 8. use the case mouth to overheat quickly as the heat is concentrated on the small .0
 9. surface and does not flow down to anneal the cartridge case shoulder during the process. Do not reuse the same case multiple times during the setup, unless you allow it to cool completely back to room temperature. If it is still warmer than room temperature, it will appear to take less time than actually needed to properly anneal.
 10. Once you are satisfied the annealing machine is working properly and the Annie timer settings are yielding the cases annealed as you prefer, you can load the hopper with the remainder of your cartridge cases to be processed and continue annealing.

If for any reason the Annie power supply does not work as described above, it should be returned to Fluxeon for service. Giraud Tool Company does not service the Fluxeon power supply. We know how to apply it, and operate it, not how it works internally or how to repair it. We suggest you contact Fluxeon directly by email or telephone before attempting to return a unit for service.

III. THINGS TO CONSIDER, FAQs, and HINTS

The following is a list of observations, questions and answers, as well as tips we have noticed while using the annealer and may answer some of your questions about the machine and annealing process.

1. Changes of the ambient temperature of the brass will cause the time duration needed for annealing to vary. Cases annealed in a cool basement in February will require more time than warm cases annealed in the garage in July. Usually the time difference is minimal, but there is a difference. I have noticed times of 1.2 seconds for .223 brass in July increased to 1.5 seconds in February to yield the same finished product. You can't always just dial in the last setting and expect it to perform the same way if the ambient temperature is different.
2. When applying Tempilaq to cases for a gas fired annealer, the paint needs to be on the inside of the case mouth so the flame does not immediately change the paint before the brass material is up to temperature. With induction heating, you can apply the Tempilaq on the exterior of the case. The induction heating will heat the base

- material without acting like an external heat source, like a microwave oven heats food from the inside without burning the edges or bottom.
3. When using a gas fired annealer, the cartridge case spins as the trolley plate moves from right to left, heating the case neck evenly. With the induction power supply, the case does not rotate while the induction current is flowing. The electro-magnetic field created during the heating process prevents the case from rolling. There is nothing wrong with the machine when this happens. The induction current is localized in a sphere shape where the ferrite core is cut with a slot. As long as the case neck is basically centered in the opening, the heating of the case will be uniform.
 4. As long as the duration of the induction power cycle is less than 50% of the total cycle time of the annealer movement, you should not have a problem overheating the power supply or annealer. Typically I have set the annealer to almost as fast as it could run and still not be near a 50% duty cycle with .223 or .308 cartridge cases.
 5. Not every case you anneal will end up looking like a "Lapua" or "Lake City" case with easily visible blue discoloration where the annealing took place. You cannot rely on visual indication for proper annealing results. Tempilaq is the best, easiest method for verifying the proper temperature was reached for annealing. Cases cleaned to high degree by long term vibratory action or stainless steel media in a rotary tumbler will clean the brass so well that it completely removes the oxide layer or tarnish from the brass. The typical blue discoloration is the result of the oxide layer reacting with high temperature during the annealing process. If the oxide layer has been removed, there is nothing to discolor. If you absolutely want the blue discoloration, either do not super clean the cases, or clean them and then leave them exposed to air for a few days to allow a small oxide layer to form before annealing them.
 6. Hand held IR thermometers will not give you a reliable result for temperature during the annealing process. The brass material, when clean, is too reflective for the IR sensor to accurately read temperature. A case that has just turned 750°F indicating paint may only show 300°F when measured by the IR thermometer.
 7. Temperature indicating crayons cannot accurately be used for proper temperature indication. As soon as the case has fallen out of the annealing machine, its temperature drops very rapidly. The case that was hot enough to change 750°F indicating paint can drop to less than 212°F in a couple seconds (you can check this using a wetted Q-tip and listening for a sizzle). Waiting for the case to drop from the machine and then try and touch it with the temperature indicating crayon takes a few seconds and the case is dropping in temperature rapidly during this time. To make sure a case can change a crayon after it has dropped from the machine, it would have to be overheated by a large margin and most likely ruined as the zinc is burned out of metallic solution with the copper in the brass alloy.

8. Dropping annealed cases into water is not necessary. If the cases are not overheated during the annealing process, simple air cooling will not harm the cases or allow the case head to be damaged. You can use 425°F Tempilaq to prove or monitor it. Brass alloys do not use the same heat treating mechanism as steel alloys. Quenching in water after heating does nothing to brass cartridge cases except cool them down and make them wet. If you were going to wet tumble them in stainless media, it doesn't hinder anything. If you were going to try and load them as your next step, you would have to completely dry the cases before doing anything else.

IV. CONTACT INFO

As with any of our other products, if you have questions, please feel free to contact us and will do our best to answer your questions or help you as needed. We can be reached using the info below:

Telephone: 281-238-0844 (orders and info, 9am to 5pm, M-F, CST)
713-907-2695 (info only)
281-232-0987 (fax, only for other paperwork, drawings, resale documents, etc.)

Email: doug@giraudtool.com

Website: www.giraudtool.com (download instruction manuals 24/7)